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Effect of Yoga on School Students.

INTRODUCTION AND
OBJECTIVES.

Yoga teaching has been introduced in Kendriya Vidyalayas all over the country to promote healthy development of students personality. Specially trained yoga instructors have been posted in these schools for imparting instructions in the theory and practice of yoga. Class-wise yoga programme for classes 1 to 12 has been designed for this purpose. During the academic session 1981-82, from October, 1981 when yoga lessons were started, upto March* 1982, students of all the twelve classes were exposed to yoga teaching, twice a week, in groups of 150 to 200 students. An average of about twenty hours of yoga teaching was conducted upto the end of the school session 1981-82.

This exploratory study was undertaken to examine the short term effects of yoga teaching on selected aspects of students personality in three Kendriya Vidyalayas in Delhi. Personality dimensions covered in this study were related to emotional stability, self-discipline or control, frustration tolerance, moralistic tendencies, convergent and divergent thinking, and general attitude towards yoga teaching in schools. To a limited extent, effect of yoga on students' attentiveness in classroom was also examined in one school. It was hypothesized that teaching of yoga will positively contribute to the development of above mentioned personality/behaviours dimensions.

METHODOLOGY:

A total of 245 students, drawn from three Kendriya Vidyalayas in Delhi, were followed up in this study. The schools were selected in consultation with the Assistant Commissioner of Kendriya Vidyalayas Sangathan. The major consideration in selecting these schools was their nearness to the NCERT to save on travelling time and travelling expenditure. In each school, one section of classes 7th, 9th and 11th were selected on the advice of the Principal. The selection of students and schools was, thus, not based on the principle of random sampling.

The selected groups of students in each school were administered the Hindi adaptation of Jr. and Sr. High School Personality Questionnaire of Cattell, a non-verbal picture completion test of divergent thinking of Torrance, and an attitude inventory specially developed to study students attitude towards Yogabhyas. A rating scale was administered to teachers to have an estimate of students' attentiveness in their class. This was restricted to three subject teachers of one section of classes 10 and 12 in one school only. These measures were administered in August-September 1981 before the commencement of yoga teaching in these schools, and again in February/March 1982, after about six months of yoga teaching, toward the end of school session.

In view of the repeated measures on the same student before and after yoga teaching, rather small number of students in each sub-group and the purposive nature of samples, the non-parametric SIGN TEST was applied to examine the significance of possible changes in students' behaviour due to yoga teaching. The research design followed in this study provided three replications in three schools, for three grade levels. Results were analysed separately for boys and girls of three grades in three schools. In all 18 independent observations were available on each criterion variable included in the study. Sex, class and school wise distribution of students included in the study is presented in table I.

One section each of classes 10 and 12 students in one school was taken up to examine the effect of yoga on attentiveness in classroom. Three subjects teachers ratings were obtained on a 5-point rating scale for this purpose. In all, 81 students and six teacher were involved for this purpose. Of these 40 students belonged to class 10, and the remaining 41 were studying in class 12.

Students responses on various measures and teachers ratings were ~~statistical~~ statistically treated to study the significance of observed changes in the selected personality and behaviour dimensions. Keeping in view the claims of advocates of yoga teaching that students exposed to 'Yogabhyas' would acquire more emotional stability, self-discipline, moralistic tendencies, frustration-tolerance, convergent and

divergent thinking, favourable attitude towards yogabhyas, and attentiveness during the classroom teaching, the observed differences in scores on these aspects of students behaviour before and after yoga teaching were examined for their statistical significance.

FINDINGS

The findings are presented in table 2 to 9.

Emotional Stability

Table 2 presents figures, in percentages, of students who showed an increase, decrease, or no-change in their emotional stability scores. Out of eighteen groups of students examined in this context, in eight groups the percentage of students who showed an increase was more than the number of students who showed a decrease in their scores on emotional stability. None of these eight groups differences in emotional stability before and after yoga teaching, however, could be considered as statistically significant as the increase was only marginal and could be attributed due to chance factors, and not necessarily due to yoga teaching. It is, however, interesting to note that five out of eight groups of students, showing change in emotional *stability* scores in the expected direction, belong to the same school, suggesting that perhaps this could be due to some factor applicable to that school only.

Frustration Tolerance

Observed changes in frustration-tolerance are given in Table 3. Here, six out of eighteen groups of students showed increase in their frustration-

tolerance and only for one group the observed change met the statistical limit of significance at five percent level. In the remaining twelve groups the available trend is in the negative direction, and in two cases, it is significant at 5 percent level.

Divergent
Thinking

Changes observed in divergent thinking are relatively more marked. In eleven out of eighteen groups the trend is positive, and in three cases, the observed positive change is significant at 5 percent level. In the remaining seven groups the trend is negative in five cases, and no-change in two cases, but none of these are statistically significant. Table 3(a) may be seen in this context.

Moralistic
Tendency

Moralistic tendencies do not seem to be affected by yoga teaching to any appreciable extent as may be seen from the figures presented in Table 4. In none of the four out of eighteen groups the observed change in the positive direction has been found to be significant. On the contrary, in two out of twelve groups, which show negative trend, the change has been found to be significant at 5 percent level.

Convergent
Thinking

In seven out of eighteen groups of students the observed change was in the expected, that is, positive direction, and only for one group it was found to be statistically significant at five percent level. Negative trend was observed in seven groups but these changes were not ~~stat~~ statistically significant. In

the remaining four groups the score on convergent thinking were not at all affected by the yoga activities in the schools. Specific figures on observed changes are given in Table 5.

Self-disciplina

Changes observed in respect of this behaviour were either in the negative direction or there was no change at all. In fourteen out of eighteen groups observed in this context, the changes were in the negative direction, and three of these were statistically significant. In the remaining four groups no change was observed, as may be seen in Table 6.

Attitude Toward Yogabhyasa

Findings reported in Table 7 suggest that majority of student groups showed a decline in their attitude towards the yogabhyas which was highly favourable before they started doing yoga in their school. Only two groups (out of eighteen) showed an increase in their attitude scores, and in one case, it was statistically significant at 5 percent level. Otherwise, in sixteen (out of eighteen) groups the attitude scores showed a decline and in six cases the observed change in attitude was found to be statistically significant ranging from 5 percent to .001 levels.

Students' Attentiveness in Classroom

Table 8 shows observed change in this respect. Results indicate that Teaching of Yoga did not contribute significantly to students'

attentiveness in the classroom. On the contrary, in one group the change was in the negative direction and significant.

School-wise and sex-wise distribution of positive effects, observed on the selected personality/behaviour dimensions, are summarized in Table 9. School III shows maximum positive effects, numbering 18, among the schools, out of possible 126 (eighteen student groups and seven behaviour dimensions). The other two schools, with 10 each, take the second position. Of these, only 5 were found to be statistically significant, and could be considered due to yoga teaching and all others could be attributed to chance factor.

Sex-wise distribution of positive effects observed come to 21 for boys and 17 for girls out of a possible 63 under ideal conditions (3 classes X 3 schools X 7 behaviour dimensions).

It may thus be seen that a limited exposure of about twenty hours of yoga teaching spread over six months, conducted in groups of 150 to 200 students, was perhaps not enough to bring about expected changes in the behaviour patterns of students included in this study.

TABLE I

Distribution of Students included in the study.

<u>School</u>	<u>Class #</u>	<u>Boys</u>	<u>Girls</u>	<u>Total</u>
I	7th	18	15	33
	9th	11	17	28
	11th	16	7	23
II	7th	25	16	41
	9th	20	9	29
	11th	16	5	21
III	7th	13	11	24
	9th	18	11	29
	11th	7	10	17
Total		<u>144</u>	<u>101</u>	<u>245</u>

Observed change in Emotional Stability

Class	Sex	Observed change (in percent)						P-value	Direction of change
		Increase		Decrease		No change			
		%	N	%	N	%	N		
11th	B	50.00	(8)	43.75	(7)	6.25	(1)	.53	+
9th	B	42.44	(5)	45.45	(5)	5.05	(1)	.42	+
7th	B	55.55	(10)	22.22	(4)	22.22	(4)	.00	+
11th	B	20.00	(3)	71.43	(5)	0.00	(0)	.23	-
9th	B	23.53	(4)	64.70	(11)	11.76	(2)	.06	-
7th	B	22.22	(4)	75.00	(11)	0.00	(0)	.35	-
11th	B	37.50	(6)	43.75	(7)	18.75	(3)	.50	-
9th	B	55.00	(11)	40.00	(8)	5.00	(1)	.32	+
7th	B	40.00	(10)	40.00	(12)	12.00	(5)	.41	-
11th	B	40.00	(2)	60.00	(3)	0.00	(0)	.10	-
9th	B	44.44	(4)	55.55	(9)	0.00	(0)	.50	-
7th	B	31.25	(5)	50.00	(8)	18.75	(5)	.20	-
11th	B	71.43	(5)	14.29	(1)	14.29	(1)	.10	+
9th	B	50.00	(7)	44.44	(8)	5.55	(1)	.50	+
7th	B	60.25	(9)	25.07	(5)	7.69	(1)	.07	+
11th	B	70.00	(7)	30.00	(3)	0.00	(0)	.17	+
9th	B	27.27	(5)	63.64	(7)	9.09	(1)	.17	-
7th	B	25.25	(5)	30.25	(4)	10.15	(2)	.50	+

Note :- P-values are based on actual number of students who showed increase, or decrease in their scores after exposure to yoga teaching. Actual number is given in parentheses.

Table 8
Observed Change in Frustration Tolerance

Class	Date	Observed Change (in percent)						P-value	Direction of change
		Increase		Decrease		No Change			
		%	N	%	N	%	N		
11th B	91.50	(10)	51.25	(5)	6.25	(1)	.15	-	
9th B	51.54	(6)	45.45	(5)	0.00	(0)	.50	=	
7th B	78.22	(18)	27.77	(5)	0.00	(0)	.04 *	-	
11th G	57.14	(4)	0.00	(0)	42.86	(3)	-	=	
9th G	47.05	(8)	29.41	(5)	23.52	(4)	.29	=	
7th G	73.53	(11)	6.66	(1)	20.00	(5)	.003 *	-	
11th B	63.85	(11)	18.75	(8)	12.50	(2)	.02 *	-	
9th B	40.00	(3)	40.00	(8)	20.00	(4)	.50	=	
7th B	32.00	(8)	52.00	(13)	16.00	(4)	.19	+	
11th G	60.00	(5)	20.00	(1)	20.00	(1)	-	=	
9th G	63.53	(8)	44.44	(4)	0.00	(0)	.80	-	
7th G	43.75	(7)	80.00	(8)	6.25	(1)	.50	+	
11th B	52.85	(9)	57.14	(4)	0.00	(0)	.50	+	
9th B	53.93	(7)	50.00	(9)	11.11	(2)	.40	+	
7th B	57.76	(4)	33.48	(5)	30.76	(4)	.50	+	
11th G	23.00	(2)	80.00	(8)	0.00	(0)	.05 *	+	
9th G	54.54	(6)	33.33	(4)	8.09	(1)	.57	-	
7th G	27.27	(5)	27.27	(3)	43.45	(5)	.65	=	

* Observed change statistically significant and could be attributed to yoga teaching.

Table 3(a)

Observed Change in Divergent Thinking

School	Class	Sex	Observed Change (in percent)						P-value	Direction of Change
			Increase		Decrease		No Change			
			%	N	%	N	%	N		
L.I.T.	11th	B	37.50	(6)	12.75	(5)	43.75	(7)	.25	+
	9th	B	27.27	(5)	33.33	(4)	34.33	(4)	.50	=
	7th	B	33.33	(6)	33.33	(6)	33.33	(6)	.61	=
	11th	G	57.14	(4)	23.57	(2)	14.29	(1)	.34	+
	9th	G	47.05	(8)	23.52	(4)	29.41	(5)	.19	+
	7th	G	46.66	(7)	33.33	(5)	20.00	(3)	.30	+
R.X.P.	11th	B	71.42	(10)	14.28	(2)	14.28	(3)	.02 [*]	+
	9th	B	30.00	(6)	30.00	(6)	40.00	(8)	.61	=
	7th	B	64.00	(16)	20.00	(5)	16.00	(4)	.01 [*]	+
	11th	G	00.00	(0)	66.66	(2)	33.33	(1)	-	-
	9th	G	22.22	(2)	33.33	(3)	44.44	(4)	.50	=
	7th	G	23.00	(4)	43.75	(7)	31.25	(5)	.27	=
I.N.A.	11th	B	57.14	(4)	42.85	(5)	00.00	(0)	.50	+
	9th	B	66.66	(10)	20.00	(5)	13.33	(2)	.25 ²⁵	+
	7th	B	33.45	(5)	30.76	(4)	30.76	(4)	.50	+
	11th	G	30.00	(2)	30.00	(5)	30.00	(3)	.25	=
	9th	G	45.45	(5)	33.33	(4)	19.18	(2)	.50	+
	7th	G	45.45	(5)	33.33	(4)	19.18	(2)	.50	+

* Observed Change statistically significant and could be attributed to yoga teaching.

Table 4

Observed Change in Moralistic Tendencies

Class	Sex	Observed change (in percent)						P-value	Direction of change
		Increase		Decrease		No change			
		%	N	%	N	%	N		
11th	D	50.00	(8)	31.25	(5)	18.75	(3)	.29	+
9th	B	63.63	(7)	27.27	(3)	9.09	(1)	.17	+
7th	B	27.77	(5)	66.66	(12)	5.55	(1)	.07	=
11th	G	42.85	(8)	57.14	(4)	0.00	(0)	.00	=
9th	G	35.29	(8)	52.04	(9)	12.76	(2)	.20	=
7th	G	33.33	(3)	46.66	(7)	20.00	(3)	.55	=
11th	B	31.25	(5)	30.00	(8)	18.75	(3)	.29	=
9th	B	30.00	(6)	60.00	(12)	10.00	(2)	.11	=
7th	B	12.00	(5)	72.00	(18)	16.00	(4)	.001*	=
11th	G	0.00	(0)	30.00	(4)	20.00	(1)	=	=
9th	G	44.44	(4)	33.33	(3)	22.22	(2)	.80	+
7th	G	43.75	(7)	31.25	(5)	25.00	(4)	.73	+
11th	B	42.85	(8)	42.85	(8)	14.28	(1)	.65	=
9th	B	33.33	(7)	55.55	(10)	5.55	(1)	.61	-
7th	B	23.07	(3)	62.23	(9)	7.69	(1)	.07	-
11th	G	50.00	(5)	30.00	(3)	0.00	(0)	.62	=
9th	G	45.45	(5)	34.54	(6)	0.00	(0)	.50	-
7th	G	50.00	(6)	58.33	(6)	43.75	(6)	.01	-

* Observed change statistically significant and could be attributed to yoga teaching.

Table 5

Observed Change in Convergent Thinking

Sex	Observed Change (in percent)						P-value	Direction of change
	Increase %	N	Decrease %	N	No Change %	N		
B	25.00	(4)	43.75	(7)	31.25	(5)	.27	-
B	48.48	(5)	45.45	(5)	9.09	(1)	.42	=
B	27.77	(5)	30.00	(10)	22.22	(4)	.21	-
G	27.14	(4)	14.29	(1)	28.57	(2)	.19	+
G	37.32	(4)	22.94	(9)	23.52	(4)	.13	-
G	60.00	(9)	13.33	(2)	26.67	(4)	.05	+
B	31.25	(8)	43.75	(7)	25.00	(4)	.33	-
B	40.00	(8)	40.00	(8)	20.00	(4)	.50	=
B	48.00	(12)	40.00	(10)	12.00	(5)	.41	+
G	20.00	(1)	50.00	(1)	30.00	(5)	-	=
G	33.33	(3)	44.44	(4)	22.22	(2)	.50	-
G	68.75	(11)	25.00	(4)	6.25	(1)	.04	+
B	57.14	(4)	14.29	(1)	28.57	(2)	.19	+
B	44.44	(9)	44.44	(8)	11.11	(2)	.59	=
B	30.76	(4)	23.23	(9)	46.00	(10)	.13	+
G	30.00	(5)	30.00	(2)	40.00	(6)	.50	+
G	54.54	(6)	35.13	(8)	22.27	(5)	.14	+
G	27.27	(5)	48.48	(5)	27.27	(5)	.34	-

* Observed change statistically significant and consistent for convergent thinking.

Table 6

Observed Change in Self-Discipline

School	Class	Sex	Observed change (in percent)						P-value	Direction of change
			Increase		Decrease		No Change			
			%	N	%	N	%	N		
I.I.T.	11th	B	51.25	(5)	56.25	(8)	12.50	(2)	.21	-
	9th	B	33.33	(4)	63.63	(7)	00.00	(0)	.27	-
	7th	B	33.33	(6)	44.44	(8)	22.22	(4)	.39	-
	11th	G	29.37	(2)	71.42	(8)	00.00	(0)	.23	-
	9th	G	41.17	(7)	41.17	(7)	17.64	(5)	.60	-
	7th	G	26.66	(4)	73.33	(11)	00.00	(0)	.06	-
R.K.P.	11th	B	10.75	(3)	75.00	(12)	6.25	(1)	.01 [*]	-
	9th	~~12th~~	~~25.00~~	~~(5)~~	~~65.00~~	~~(13)~~	~~10.00~~	~~(2)~~	~~.01~~	-
		B	25.00	(5)	65.00	(15)	10.00	(2)	.04 [*]	-
	7th	B	40.00	(10)	44.00	(11)	16.00	(4)	.50	-
	11th	G	20.00	(1)	60.00	(3)	20.00	(1)	-	-
	9th	G	~~33.33~~ 44.44	~~(3)~~ (4)	~~55.55~~ 55.55	~~(5)~~ (5)	~~00.00~~ 00.00	~~(0)~~ (0)	~~.50~~ .50	-
7th	G	43.75	(7)	43.75	(7)	12.50	(2)	.60	-	
I.N.A.	11th	B	42.85	(3)	42.85	(3)	14.28	(1)	.65	-
	9th	B	31.99	(7)	61.11	(11)	00.00	(0)	.24	-
	7th	B	23.07	(3)	76.92	(10)	0.00	(0)	.04 [*]	-
	11th	G	40.00	(4)	40.00	(4)	20.00	(2)	.63	-
	9th	G	36.36	(4)	54.54	(6)	09.09	(1)	.17	-
	7th	G	27.27	(3)	72.72	(8)	00.00	(0)	.11	-

* Observed change statistically significant and could be attributed to yoga teaching.

Table 7

Observed change in Attitude Towards Bogubhayas

Class	Sex	Initial	Observed change \$in percent)						T-value	Direction of change
			Increase \$	N	Decrease \$	N	No change \$	N		
11th	B	57.50	(6)	50.00	(6)	12.50	(2)	.40	-	
9th	B	60.00	(6)	100.00	(11)	00.00	(0)	.001*	-	
7th	B	27.77	(5)	65.66	(12)	5.55	(1)	.07	-	
11th	C	14.28	(1)	85.71	(6)	00.00	(0)	.006 *	-	
9th	G	17.64	(3)	82.35	(14)	0.00	(0)	.006*	-	
7th	G	38.66	(4)	73.33	(11)	0.00	(0)	.06	-	
11th	D	25.07	(3)	76.02	(10)	0.00	(0)	.04 "	-	
9th	B	60.00	(12)	40.00	(8)	0.00	(0)	.25	+	
7th	D	24.00	(6)	72.00	(18)	4.00	(1)	.01 "	-	
11th	C	40.00	(2)	60.00	(3)	0.00	(0)	-	-	
9th	C	35.55	(3)	66.66	(6)	0.00	(0)	.25	-	
7th	C	25.00	(4)	68.75	(11)	6.25	(1)	.05 "	-	
11th	B	14.28	(1)	85.71	(6)	0.00	(0)	.06	-	
9th	B	21.22	(4)	77.77	(14)	0.00	(0)	.01 *	-	
7th	B	50.45	(5)	84.84	(7)	7.69	(1)	.53	-	
11th	G	30.00	(8)	20.00	(2)	0.00	(0)	.05 *	-	
9th	G	27.27	(3)	72.72	(8)	0.00	(0)	.11	-	
7th	C	27.27	(3)	72.32	(6)	0.00	(0)	.11	-	

* Observed change statistically significant and could be attributed to zero baseline

TABLE 8

Observed Changes in Student's Attentiveness

Subject Teacher	Class	Increase		Decrease		No change		P-Value
		%	N	%	N	%	N	
Hindi	10th	15.00	(8)	22.50	(9)	62.50	(25)	.30
History	10th	10.00	(4)	20.00	(8)	70.00	(28)	.19
English	10th	7.50	(3)	37.50	(15)	55.00	(22)	.004*
Chemistry	12th	19.51	(8)	21.95	(9)	58.53	(24)	.50
Maths	12th	26.82	(11)	34.14	(14)	39.02	(16)	.35
English*	12th							

* English teacher of 12th class was transferred during the course of this study and therefore his ratings had to be dropped from the analysis.

TABLE 9**School-wise Distribution of Positive Effects of
Yoga Teaching on Selected Behaviours.**

Personality/ Behaviour Dimension	School I		School II		School III		Total
	B	G	B	G	B	G	
Emotional Stability	2	0	1	0	3	2	8
Frustration- Tolerance	0	0	1	1	3(1)	1	6
Divergent Thinking	1	3	2(2)	0	3(1)	2	11
Moralistic Tendencies.	2	0	0	2	0	0	4
Convergent Thinking	0	2(1)	1	1	1	2	7
Self- Discipline	0	0	0	0	0	0	0
Attitude Towards Togabhyas.	0	0	1	0	0	1	2
Total	5	5	6	4	10	8	38

Notes: Figure in parenthesis indicates the number of times the observed +ve effect was found to be statistically significant at five percent level.